



ICAO ENGINE nvPM EMISSIONS DATA SHEET

SUBSONIC ENGINES

ENGINE IDENTIFICATION: PW1124G1-JM BYPASS RATIO (-): 12.7
 UNIQUE ID NUMBER: 01P18PW149 PRESSURE RATIO π_{co} (-): 28.8
 COMBUSTOR: TALON X, Block-C
 ENGINE TYPE: TF RATED OUTPUT F_{co} (kN): 107.8

REGULATORY DATA

CHARACTERISTIC VALUES:	LTO_{mass}/F_{co} (mg/kN)	LTO_{num}/F_{co} (particles/kN)	NVPM MASS CONCENTRATION ($\mu\text{g}/\text{m}^3$)
LTO/ F_{co} AND MAX nvPM _{mass}	54.4	2.50E+15	1168
AS % OF CAEP/10 LIMIT	-	-	18.3
AS % OF CAEP/11 LIMIT (InP)	2.3	17.2	
AS % OF CAEP/11 LIMIT (NT)	10.8	40.4	

MEASURED DATA

MODE	POWER SETTING (% F_{co})	TIME minutes	FUEL FLOW kg/s	EMISSIONS INDICES*		NVPM MASS CONCENTRATION PEAK nvPM _{mass} ($\mu\text{g}/\text{m}^3$)
				EI _{mass} (mg/kg)	EI _{num} (particles/kg)	
TAKE-OFF	100	0.7	0.710	41.0	7.80E+14	
CLIMB OUT	85	2.2	0.600	17.5	4.74E+14	
APPROACH	30	4.0	0.210	5.8	3.31E+14	
IDLE	7	26.0	0.080	10.6	9.32E+14	
LTO TOTAL (kg, mg, number of particles)			284	4223	1.94E+17	-
NUMBER OF ENGINES				1	1	1
NUMBER OF TESTS				3	3	3
AVERAGE LTO/ F_{co} VALUES (mg/kN, particles/kN)				39.2	1.80E+15	-
MAX EI VALUES (mg/kg, particles/kg) AND MAX MASS CONC. ($\mu\text{g}/\text{m}^3$)				41.0	9.44E+14	907

* Emissions Indices are corrected for thermophoretic loss and fuel hydrogen content

DATA FOR EMISSIONS INVENTORIES (ESTIMATIONS FOR ENGINE EXIT PLANE VALUES)

MODE	POWER SETTING (% F_{co})	CORRECTED EMISSIONS INDICES	
		EI _{mass_SL} (mg/kg)	EI _{num_SL} (particles/kg)
TAKE-OFF	100	53.3	3.28E+15
CLIMB OUT	85	24.2	2.20E+15
APPROACH	30	8.6	2.61E+15
IDLE	7	21.0	9.09E+15

AMBIENT CONDITIONS

	From		To	
	BAROMETER (kPa)	100.8	103.0	HEAT OF COMBUSTION (MJ/kg)
TEMPERATURE (K)	266.7	277.2	HYDROGEN CONTENT (%mass)	13.84
HUMIDITY (kg water/kg dry air)	0.0004	0.0017	AROMATICS CONTENT (%vol)	15.3
			NAPHTHALENE CONTENT(%vol)	1.87
			SULPHUR CONTENT (ppm by mass)	705

MANUFACTURER: Pratt & Whitney
 TEST ORGANIZATION: Pratt & Whitney
 TEST LOCATION: East Hartford, CT
 TEST DATES: 02/03/2017-04/03/2017

REMARKS

1. Data from certification report PWA-12243
2. 1 engine tested
3. TALON-X, Block-C* combustor
4. Certification in accordance with ICAO Annex 16 Vol. II., Part III, Chapter 2.
5. nvPM levels in accordance with ICAO Annex 16 Vol. II, Part III, Chapter 4 and Appendices 7 and 8. (CAEP/10)